

NITROGEN AND PHOSPHORUS LOSSES FROM DRAINED WETLANDS ADJACENT TO UPPER KLAMATH LAKE, OREGON

Snyder, Daniel T.

U.S. Geological Survey, 10615 S.E. Cherry Blossom Drive, Portland, OR 97216;
phone: (503)251-3287; fax (503) 251-3470; email: dtsnyder@usgs.gov

Upper Klamath Lake likely is naturally eutrophic, though effluent pumped from drained wetlands may contribute to increased eutrophication. Most wetlands surrounding Upper Klamath Lake have been drained for crop cultivation and grazing. Lowering the water table in the wetlands allows air and oxygenated water to move through the subsurface and facilitate aerobic decomposition of the peat soils. Nutrients, nitrogen and phosphorus, are then liberated, leach into adjacent ditches, and are subsequently pumped to the lake or its tributaries, or are lost through other pathways. Potential nutrient loading to Upper Klamath Lake from drained wetlands was estimated by determining the pre-drainage and present-day nutrient masses of organic soils within the drained wetlands to calculate the loss in nutrient mass. For all the drained wetlands sampled, the estimated cumulative nitrogen and phosphorus loss since drainage totaled 250,000 tons and 4,300 tons, respectively, about 30% and 22% of the respective pre-drainage masses of those nutrients in the soils. The estimated nutrient input to the lake from sampled drained wetlands is a maximum value, as not all the nutrients released by the soils are discharged to the lake. The results of this study could be useful in determining which drained wetlands may provide the greatest benefits with regard to reducing nutrient loads to the lake if restored.